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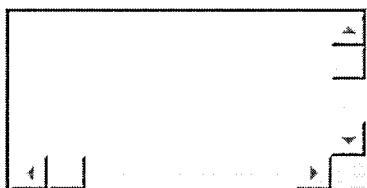
The invention relates to a method for making paper, which is characterized in that the paper is impregnated with an acrylate-containing dispersion or mixture and the acrylate-containing dispersion or mixture is forced into the paper. The paper so produced can be used to produce boards, especially floor panels even if said panels have only a mass per unit area of 15 to 35 g/m<sup>2</sup>, thereby reducing the costs of production of such panels.

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Paper for the production of panels as well as procedures for the paper trade the invention concerns a procedure for the production of a paper for plates as well as procedure in accordance with manufactured paper. Furthermore the invention concerns plates, when whose production the paper is used, as well as an associated manufacturing process.

A plate according to invention can be processed to a panel. A panel, for example admits 090 6994 A1 from the block letters EP, is a usually oblong, thin plate, which can be connected laterally, thus at Längs-und transverse sides for example by slots and feathers/springs with further panels. So connected panels are used in particular as floor covering or as wall lining.

A plate becomes in accordance with the state of the art and. A. manufactured as follows. A paper, which " Gegenzugpapier " is called, soaked with resin, is made available. Above the Gegenzugpapiers a mother board is arranged. A further paper soaked with resin is arranged above the plate.

The two papers are injected with one another with the plate at temperatures around 200 C to the plate.

The paper arranged above the plate is regularly provided with a decoration, which determines the appearance of the plate from the top side.

On the side with the decoration SiC particles or corundum grains can be bonded, in order to receive so a plate with a particularly resistant surface before injecting. On the side with the SiC particles and/or. the corundum additionally a layer from cellulose is applied.

The paper with the imprinted decoration is called fancy paper. The cellulose layer is called " overlay ".

The fancy paper is arranged with the overlay above the mother board. The fancy paper is then. between the mother board and the overlay.

Subsequently, Gegenzugpapier, mother board, fancy paper and overlay at a temperature in the order of magnitude of 200 C are injected with one another. If the layer system leaves the press, then a plate is present, which exhibits a decoration with a particularly hard surface on a side.

By saws and milling can be made of the plate of panels with desired masses, laterally attached feathers/springs and slots. The panels are used in particular as floor coverings.

The mother board lends mechanical stability to the panel. The decoration on the fancy paper determines the appearance of the later wall or floor surface.

The layer consisting of corundum or SiC2 provides for a good firmness opposite abrasion and such a thing.

The Gegenzugpapier works against a delay of the mother board. The overlay protects a surface of the press before the hard SiC2oder corundum grains otherwise out-standing.

The papers used with the state of the art usually exhibit a weight above 70 g per square meter. If the aforementioned value is fallen below, then the paper is does not reissfest enough, in order the mechanical loads during the disk production to have grown. Furthermore the paper becomes so thin that it is used to transparency will, in order than fancy paper to be able.

A high paper weight exhibits however the disadvantage that the materials consumption is accordingly high.

Not only the actual paper weight is to be considered, but also the resin, with which the paper is soaked, in order to be able to use it with the production of a plate. The higher the paper weight is, resin for the impregnation of the paper is all the more needed. Accordingly the paper trade increases in price.

In order to arrive at thin, tear-firm paper, on pre-impregnated paper a plastic mixture is applied. This plastic mixture penetrates not into the paper, but represents an additional layer, which borders on the paper. The other side of the paper is provided regularly with a self adhesive layer. In such a way manufactured paper is under the designation " finish foil " well-known and can plates be glued on.

Task of the invention is ago and the supply of a paper, which is coloured more covering substantially more tear-firmly and in an arrangement in optical regard in the comparison to the state of the art initially mentioned. Task of the invention is ago and the supply of inexpensive plates, with which the paper according to invention is used.

Procedure in accordance with the paper with a acrylathaltigen dispersion or mixture is impregnated.

Compared with an impregnation, which is only accomplished with a resin, is verfahrensgemäß impregnated paper substantially more tear-firmly. The paper can exhibit a weight per unit area of for example 30 g/m2 and nevertheless the mechanical loads with the production of a plate in the kind initially specified grew. Attempts even resulted in that the mechanical firmness of the paper according to invention is so high that the impregnation

speed can be increased during the resin soaking planned for the disk production from at present 40 to 60 m/min to 120 m/min.

Accordingly small in the comparison to the state of the art initially mentioned the consumption of the paper material and the impregnating agents.

The acrylathaltige dispersion or mixture contains water, in which acrylate particles are dispersed.

Suitable acrylates are therefore such which are well dispersing.

In a favourable arrangement of the invention the acrylathaltige dispersion or mixture is in-pressed for impregnation into the paper. For this for example the paper is passed through rollers, which are against each other pressed. On a roller the acrylathaltige dispersion or mixture is continuously laid on. If the paper leaves the roller, then the dispersion or the mixture was in-pressed into the paper.

It is substantial that the dispersed acrylate and/or. the mixture is not only applied on the paper, there then the dispersed acrylate and/or. the mixture would not penetrate only insufficiently or into the paper. It is guaranteed by pressing that penetrates the dispersion or the mixture into the paper and the desired improved firmness attains so the paper. In addition the paper is then provided with the dispersion or the mixture in such a way that during the subsequent treatment relative to a plate additionally used resin does not penetrate or at least only slightly into the paper.

In a favourable arrangement of the procedure the paper before the Hineinpressen of the acrylathaltigen dispersion or mixture of the Imprägbuerung is aired out. For this the paper is soaked in particular on one side with the acrylathaltigen dispersion or mixture. Air in the paper is replaced in such a way by the dispersion or the mixture.

In an execution form of the invention resin is used an acrylate mixture or dispersion, in particular a Aminoharz acrylate mixture for the impregnation. With a such mixture or dispersion paper weights up to a lower bound of approx. leave themselves. 15 g per square meter realize.

So manufactured papers are sufficiently reissfest with suitable mixing proportion, in order to be able to be used during the disk production for example as pressure basis paper. It can remain left for the specialist to find suitable mixing proportion by few attempts.

The paper should not exceed an upper limit preferentially by 60 g/m<sup>2</sup>, from 40 g/m<sup>2</sup>, in order to obtain sufficiently high cost advantages. Optimal values lie at present between 25 to 35 g/m<sup>2</sup>.

In a favourable arrangement of the invention Farbpigmente, so for example aluminium silicate, are added calcium carbonate, TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> or Magnesiumsilikat, the mixture. The light permeability is thereby strongly reduced.

The paper impregnated using Farbpigmenten can be used due to its opacity and high cover strength very well as fancy paper.

In a preferential execution form of the invention the acrylathaltige dispersion or mixture is from both sides in-pressed into aired out paper. It was shown that then the paper from the center fills up itself with the acrylathaltigen dispersion or mixture. So impregnated paper is suitable for the disk production initially specified in particularly good way.

Procedure in accordance with manufactured paper differs from the finish foils in particular by the fact that the acrylate is not only completely or predominantly in the paper and on the surface. The interlaminar strength is substantially larger than with the initially mentioned finish foils, as a water vapour test shows. With the water vapour test paper is exposed two hours long to a water vapour. With conventional paper arises in contrast to a splitting according to invention. var ax uchgemäss paper can be used then as Gegenzugpapier or fancy paper with the production of a plate in the way initially specified.

In an arrangement of the procedure fancy paper on a side will provide not only with resistant to friction particles like silicon carbide or corundum particles, but additionally with fibers and/or balls. The fibers or balls exist PP or glass compared with the resistant to friction particles of soft materials such as polyesters, ~. The fibers and/or balls protect compacted strip during injecting a layer system, which covers the fancy paper, before damages. Without planning overlays above a layer with resistant to friction particles can be done. Become so approx. 1/3 of the costs saved, which bring for impregnating the fancy paper together with on a layer with the overlay with the state of the art result.

The impregnation of the fancy paper covers in particular the following steps. The fancy paper is soaked with resin, in particular a Aminoharz, and on a side with the decoration resistant to friction particles are applied.

Subsequently, the fibers and/or balls are applied on that. Thus it is reached that the fibers form and/balls a protecting surface layer above the resistant to friction particles in a press device.

Before applying the fibers or balls the procedure can be out-arranged as follows.

On the fancy paper additionally a layer from a Aminoharz with resistant to friction particles in special dispersion is aufgedüst, whereby the final square measure-referred to the dry weight of the rohpapiers 100% to 250% amounts to. The dispersion up nozzles, turned out as favourable, how WHERE 00/44984 are to be inferred from the block letters.

In the following it is appropriate to guarantee by means of rollers a smoothing and a uniform distribution of the aufgedüsten dispersion.

The aforementioned dispersion consists preferentially of 100 parts of a Aminoharzes, 20 to 95 parts more abrasiver, thus resistant to friction substance, 0.5 to 2.5 parts of a silane adhesion mediator, 5 to 25 parts of a flow auxiliary of material, 0.1 to 0.4 parts of a wetting agent, 0.05 to 0.4 parts of a parting agent and a Aminoharzhärters.

As Aminoharz in particular a melamin resin, as flow auxiliary material for example Polyglycolether, is over used s Caprolactam or Butandiol as well as abrasive substance for example silicon carbide with an average grain size from 60 to 160 mm desert aluminas in the form of corundum or from the melt with a grain size from 60 to 160. Also any mixture from silicon carbide and alumina can be planned.

Following applying of fibers and/or balls happens appropriately as follows. It becomes a mixture from a resin, the fibers and/or the balls manufactured and the mixture on the fancy paper treated in aforementioned way laid on. Planning a mixture continues to improve the protection in a press device, since then also the additional resin contributes to the protection.

The thickness of the fibers or the diameter of the balls is to be selected preferably in such a way that during pressing an appropriate layer system for the production of plates corundum or from the appropriate surface of the press are kept away from silicon carbide particles. Damages due to of hard silicon carbide or corundum particles are avoided in such a way.

The middle diameter of the balls is preferentially larger than the middle diameter of the fibers, if both fibers and balls are used. The balls guarantee then the desired protecting distance between the resistant to friction particles and for example compacted strip. The fibers provide in particular for an adjustment of resin and work against a cracking.

The surface of a press concerned in each case is protected by the invention in more improved and in particularly inexpensive way against damages by resistant to friction particles, thus for example hard corundum or silicon carbide particles. The processing of the surfaces concerned in press so for example compacted strip a so-called doublevolume-laminate-plant-takes place in according to larger temporal distances, so that with the processing connected costs and losses of production are reduced. Altogether considerable cost savings result.

Amounted to at least 0.5 mm, however at least some millimeters, so for example 2 mm, prefer typical Faserlängen 4mm or 5 mm. the longer the fiber is, so much the better is able these the surface of a plate against cracking to protect. An upper limit of the Faserlänge is in particular given by the associated viscosity rise. With to high viscosity of a resin fiber mixture cannot be processed these no more. The diameter of the fibers is for example with some 10 mm or also with 100 mm and more.

'lof a typical diameter of the balls is with 30 to 200 over. Thereby on the one hand the desired distance is ensured between corundum or the silicon carbide portion keln to the appropriate surface in a press. On the other hand the balls are small enough zizi over to be with the naked eye noticed.

The optical impression becomes by the fibers and/or. Balls unfavorably does not impair, if these exhibit the aforementioned mass and in the resin are embedded.

The fibers or balls preferably consist of polyester, PP or glass. These materials fulfill the characteristics, which are necessary after the production during production as well as. During production they behave sufficiently stably. Polyesters, PP or glass are sufficiently soft materials in the sense of the invention, in order to avoid damages of a press device. With a finished plate by the aforementioned materials a sufficient transparency is created, so that the optical impression of the decoration is not disadvantageous impaired. The materials make favourably relatively large, processable Faserlängen possible, which clearly exceed the length of, according to invention used fibers consisting of cellulose. Viscosity rise with increasing Faserlänge of artificial polymers such as polyester, polyamide fibers or of glass fibers is compared with increasing Faserlänge of cellulose fibers small.

Therefore sufficiently fibers can be registered, with which a press is protected against damages better compared with short cellulose fibers.

This is in particular the case if the fibers in form of a fleece are present, as is further down stated.

The fibers and/or balls can consist of different materials. Can be used thus for example polyester fibers, polyamide fibers and glass fibers at the same time.

Fibers are to be preferred opposite balls, since thereby cracking in the surface is avoided.

Balls are thus supplementing used preferentially. As balls therefore preferentially from glass existing hollow balls are added to the protective effect to the reinforcement, which exhibit in particular a diameter from 30 to 200 pm for aforementioned reasons.

That would requirement-in accordance with-eat fancy paper exhibits prefers a solid mass from 25 to 35 g/m<sup>2</sup>. The fiber portion amounts to then in particular 5 to 100 g/m<sup>2</sup>. Additionally for reinforcement up to 80 g/m<sup>2</sup> CSU is planned favourably geln, in particular micro glass hollow balls.

In a further favourable arrangement the fibers in form of a fleece are present. The fibers are woven as it were with one another. A fleece strengthens and protects in particularly good way. The danger of a cracking is continued to lower and thus the danger of damages of the waiters surface concerned in each case. When applying resin is particularly well fixed by the Flies a Faser-Mischung the resin during pressing. The resin contributes then particularly well in addition to the protection in a press device.

The protecting effect is additionally improved when planning a fleece by bringing in balls.

The invention is more near clarified on the basis the following example: Paper with a weight of 30 g/m<sup>2</sup> is moistened on one side with a acrylathaltigen dispersion. The dispersion contains the following components: 770 g of a commercial acrylate dispersion with a solid content of 50 Gew. - %, 225 g of a commercial urea formaldehyde soaking resin with a solid content of 50 Gew. - % as well as 5 g of a urea resin hardener. The mixture is mixed finely and brought to application.

The moistened paper is led rollers pressed through against each other. The rollers exhibit a surface consisting of hard rubber. On the rollers the aforementioned dispersion is laid on evenly and distributed evenly by blades on the roller surface.

Inside the paper, which leaves the rollers, is the acrylathaltige mixture. This paper is dried and can be used afterwards with the production of plates.

For the production of fancy paper the dispersion Farbpigmente 250 g titanium dioxide mixing into a paste with with a solid content of 70 Gew become additional. - % and 50 g Magnesiumsilikat admitted. That.

Paper is then at least as opaque as conventional. manufactured paper with a weight of 70 g/m<sup>2</sup>.

Initially mentioned the plates manufactured with the papers in way were examined after EN 438. All standard values were fulfilled surely. In particular the water vapour test was successfully completed. submitted.

The fancy paper is used preferentially as follows with the production of a plate. On the decoration top side a mixture from Aminoharz and corundum particles is aufgedüst evenly. 15 g/m<sup>2</sup> corundum thereby one uses. The wet paper web is supplied to a dryerdryer dryer. In the dryer a temperature of 170 C prevails. On in such a way treated course a mixture from a commercial Aminoharz and polyester fibers are proportioned laid on on the decoration top side. The solid mass of the order amounts to 70 g/m<sup>2</sup>. In the mixture the fiber portion is about 30 mass %. The middle would lie the fibers amounts to 5 mm. The middle diameter is with 80 over. Subsequently, a second drying step is accomplished with 160 C, until the residual moisture is with 7%. In such a way impregnated fancy paper is processed in particular in way initially mentioned to a plate to a panel for Fussbö. As Gegenzugpapier I paper likewise according to invention is used. Can resin be saved in such a way in the comparison to the state of the art 150 g/m. The paper according to invention offers advantages, if the paper weight is very high, in relation to the state of the art however also then thus for example up to 150 g/m<sup>2</sup> amounts to.

**Claims of WO02079571**

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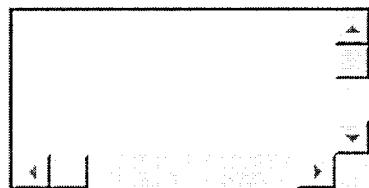
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Requirements 1. Procedure for the production of a paper, by the fact characterized that the paper with a acrylathaltigen dispersion or mixture is impregnated.

2. Procedure according to requirement I, by the fact characterized that the acrylathaltige dispersion or mixture is in-pressed into the paper.

3. Procedure after one of the preceding requirements, by the fact characterized that the acrylathaltige

Dispersion or mixture water, in that

Acrylate particles dispersed preferably are, and

Resin, in particular a Aminoharz contains.

4. Procedure after one of the preceding requirements, by the fact characterized that Farbpigmente how

Aluminium silicate, calcium carbonate, Tio<sub>2</sub> Al2O<sub>3</sub> or

Magnesiumsilikat of the acrylathaltigen mixture or

Dispersion to be added.

5. Procedure after one of the preceding requirements, by the fact characterized that the paper through

Rollers, which are against each other pressed, is passed through, whereby on at least one The acrylathaltige dispersion or mixture rolls is continuously laid on and with a blade on the roller preferably distributed.

6. Procedure after one of the preceding requirements, aadurch characterized that the paper before that

Hineinpressen of the acrylathaltigen dispersion or

Mixture is aired out and for this in particular on one side with the acrylathaltigen dispersion or

Mixture is soaked.

7. Procedure after one of the preceding requirements, by the fact characterized that the paper weight amounts to few 15 gram per square meter and/or preferentially by 60 g/m<sup>2</sup>, from 40 g/m<sup>2</sup> does not exceed an upper limit.

8. Procedure for the production of a plate, with that

Paper after one of the preceding requirements is impregnated and a layer system, that that Paper and a mother board, injected under supply are covered by warmth.

9. Procedure for the production of a plate according to the preceding requirement, with which the layer system covers a fancy paper, on before that

Inject a mixture from Aminoharz and resistant to friction particles preferably by Aufdüsen one applies.

10. Procedure for the production of a plate according to the preceding requirement, with from polyester,

PP or glass existing fibers and/or

Balls on the resistant to friction particles before that

Inject to be applied. 11.. Paper, characterized by acrylate, which is at least predominantly inside the paper.

12. Paper after the preceding

Requirement for device, producible after one of the proceeding requirements for procedure.

13. Paper after one the preceding

Requirements for device, characterized by

Paper weight from 15 to 60 g/m<sup>2</sup>, prefers to 40 g/m<sup>2</sup>.

14. Paper after one the preceding

Requirements for device, characterized through

Farbpigmente, which are inside the paper.

15. Paper after one the preceding

Requirements for device, by the fact characterized that it no splitting following those

Execution of a standardized water vapour test shows, with that the paper two hours long one

Water vapour is suspended.

16. Plate, with the paper in accordance with one of the preceding requirements for device is assigned.

17. Plate in accordance with the preceding requirement, with that a surface of the plate with resistant to friction

Particles like corundum or silicon carbide particles and preferably also from polyester, PP or Glass of existing fibers and/or balls is provided.

18. Plate in accordance with one of the two preceding Requirements, by the fact characterized that the plate is a floor panel.

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[54] 发明名称 用于制造模板的纸张及其相应的制造方法

## [57] 摘要

本发明涉及一种制造纸张的方法，其中对纸张用丙烯酸盐的分散剂或混合物进行浸渍处理。含有丙烯酸盐的分散剂或混合物被挤压入纸张中。只有当采用这种方法制造的纸张的克数仅为 15 至 35 克/平方米时，才适用于在继续加工板材时加以应用。采用本发明相应地降低了制造成本。

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# 权 利 要 求 书

- 1.一种纸张的制造方法，其特征在于，采用一种含有丙烯酸盐的分散剂或混合物对纸张进行浸渍处理。  
5 2.按照权利要求 1 所述的方法，其特征在于，将含有丙烯酸盐的分散剂或混合物挤压入纸张中。  
3.按照上述权利要求中任一项所述的方法，其特征在于，含有丙烯酸盐的分散剂或混合物系将丙烯酸盐分散在水中的分散剂或混合物，并且优选含有树脂，尤其是含有氨基树脂。  
10 4.按照上述权利要求中任一项所述的方法，其特征在于，对含有丙烯酸盐的分散剂或混合物添加入诸入硅酸铝、碳酸钙、 $TiO_2$ 、 $Al_2O_3$  或硅酸镁等色素。  
5 5.按照上述权利要求中任一项所述的方法，其特征在于，纸张在相互顶压的轧辊间通过，其中连续地对至少有一个轧辊涂覆含有丙烯酸盐的分散剂或混合物并且优先用一个刮刀将其分布在轧辊上。  
15 6.按照上述权利要求中任一项所述的方法，其特征在于，在将含有丙烯酸盐的分散剂或混合物挤压入纸张之前对纸张进行通风处理，并且尤其对纸张的一个面用含有丙烯酸盐的分散剂或混合物进行浸渍处理。  
20 7.按照上述权利要求中任一项所述的方法，其特征在于，纸张的克数至少为 15 克/平方米和/或不超过其为 60 克/平方米的上限，优选不超过 40 克/平方米。  
25 8.一种制造板材的方法，其中对按照上述权利要求中任一项的纸张进行浸渍处理并且在加热的情况下对一含有纸张和骨板的层系统进行挤压。  
9.按照权利要求 8 所述的制造板材的方法，其中层系统包括一装饰纸，挤压前将由氨基树脂和耐磨颗粒构成的混合物优选采用喷涂方式涂覆在装饰纸上。  
30 10.按照权利要求 9 所述的制造板材的方法，其中在挤压前将由聚酯、聚酰胺或玻璃构成的纤维和/或球体附着在耐磨的颗粒上。

11.纸张，其特征在于丙烯酸盐，该丙烯酸盐至少绝大部分存在于纸张的内部。

12.按照权利要求 11 所述的纸张，该纸张是按照上述方法权利要求中任一项制造的。

5 13.按照权利要求 11-12 中任一项所述的纸张，其特征在于纸张的克数为 15-60 克/平方米，优选不超过 40 克/平方米。

14.按照权利要求 11-13 中任一项所述的纸张，其特征在于色素，该色素存在于纸张的内部。

10 15.按照权利要求 11-14 中任一项所述的纸张，其特征在于，在接着进行的标准化的水蒸气试验中不会出现分解，其中将纸张置于水蒸气中两个小时。

16.板材，其中采用按照权利要求 11-15 中任一项所述的纸张。

15 17.按照权利要求 16 所述的板材，其中板材表面具有诸如刚玉颗粒或碳化硅颗粒并且优选具有由聚酯、聚酰胺或玻璃构成的纤维和/或球体。

18.按照权利要求 16 或 17 所述的板材，其特征在于，所述板材作为地板镶板。

# 说 明 书

## 用于制造镶板的纸张及其相应的制造方法

5

### 技术领域

本发明涉及一种制造用于板材的纸张的方法以及一种采用该方法制造的纸张，本发明还涉及一种采用纸张制成的板材，及其相应的制造方法。

10

### 背景技术

本发明的板材可以继续加工成镶板。例如在专利文献 EP 090 6994 A1 中记载的一种镶板通常是一种细长的薄的板材，在该板材的纵向侧和横向侧例如可以通过槽和弹簧与其它的镶板连接。采用此方式相互连接在一起的镶板尤其适用于作为地板或墙围。

一种板材根据已有技术的制造方法如下。准备一种也被称作“反张力纸”的用树脂浸渍的纸张。在该反张力纸的上面设置一骨板。将另外一张用树脂浸渍的纸张设置在骨板上。将两张纸与骨板在温度为 200°C 左右的情况下相互挤压成板材。

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在骨板上设置的纸张通常具有有规律的装饰，该装饰决定板材上侧的外观。在挤压处理之前，对装饰的上侧面滚压碳化硅颗粒或刚玉颗粒，以便获得一具有特别耐磨表面的板材。对具有碳化硅颗粒或刚玉的面上还附着一纤维素层。

带有压印装饰的纸张被称作装饰纸。纤维素层被称作“覆层”。

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带有覆层的装饰纸设置在骨板上面。所以装饰纸位于骨板与覆层之间。接着将反张力纸、骨板、装饰纸和覆层在 200°C 左右的温度下相互挤压在一起。当该层系统离开压力机时，则已形成板材，在该板材的一个面上具有一带有特别硬的表面的装饰。

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通过锯或铣可以将板材制成具有所需规格、侧面设置有弹簧和槽的镶板。所述镶板特别适用于作为地板。

骨板可提供镶板的机械稳定性。装饰纸上的装饰决定着以后的墙围表面或地板表面的外观。由刚玉或  $\text{SiC}_2$  构成的层用于实现高耐磨强度等性能。反张力板用于克服骨板的翘曲变形。覆层用于对压力机表面进行保护，否则将会受到突起的坚硬的  $\text{SiO}_2$ -或刚玉颗粒的磨损。

5 根据已有技术采用的纸张通常的克数大于 70 克/平方米。如果低于上述值，则纸张的抗撕裂强度不足以克服在制造板材时产生的机械负荷。另外纸张必须很薄，以致其非常透明，从而可以作为装饰纸加以应用。

10 很明显，高克数纸张的缺点在于，材料消耗相应较高。其中不仅要考虑到纸张的固有的克数，而且还要考虑到在制造板材时为了对所用的纸张进行浸渍处理的树脂的重量。纸张的克数越高，则对纸张进行浸渍需要使用的树脂就越多。这样势必造成昂贵的纸张制造成本。

15 为了获得薄的抗撕裂的纸张，必须对经预浸渍处理的纸张上涂覆一层塑料混合物。该塑料混合物并不浸入纸张内，而是形成一附加的与纸张邻接的层。纸张的另一面通常具有自粘结层。采用这种方式制成的纸张被称作“上光膜”并可粘接在板材上。

## 发明内容

20 本发明的目的在于制造和提出一种纸张，该种纸张的抗撕裂强度大大提高并且其设计从视觉角度考虑与已有技术相比可以覆盖有色彩。本发明的目的还在于制造和提出一种价格低廉的板材，在该板材中应用了本发明的纸张。

25 根据本发明的方法，对纸张采用含有丙烯酸盐的分散剂或混合物进行浸渍处理。与仅采用树脂进行浸渍的纸张相比，采用本发明方法浸渍的纸张的抗撕裂强度得到明显的改善。纸张的克数例如为 30 克/平方米，尽管如此仍能承受在制造板材时产生的机械负荷。经试验表明，本发明纸张的机械强度很高，以致可以将在制造板材时规定的浸渍树脂的速度由迄今的 40 至 60 米/分钟提高到 120 米/分钟。与已有技术相比，对纸张和浸渍材料的消耗也相应较少。

30 含有丙烯酸盐的分散剂或混合物包含水，丙烯酸盐在水中被分散。所以合适的丙烯酸盐是那些可以充分分散的丙烯酸盐。

根据本发明的一种有益的设计，为实现浸渍将含有丙烯酸盐的分散剂或混合物挤压入纸张中。为此，例如使纸张两个相互顶压的轧辊间通过。在一个轧辊上连续地涂覆含有丙烯酸盐的分散剂或混合物。当纸张离开轧辊时，分散剂或混合物已被挤压入纸张中。

5 重要的是，被分散的丙烯酸盐或混合物不仅仅简单地被涂覆在纸张上，否则被分散的丙烯酸盐或混合物不能或不能充分地进入纸张内。通过挤压保证了分散剂或混合物浸入纸张内并因此使纸张实现所需的强度的改善。另外，纸张具有的分散剂或混合物足以使在继续加工成板材时附加采用的树脂不能浸入或至少只能微量地浸入纸张内。

10 根据本发明方法的一种有益的设计，在将含有丙烯酸盐的分散剂或混合物挤压入纸张前，对纸张进行通风处理。为此采用含有丙烯酸盐的分散剂或混合物特别是对纸张的一面进行浸渍。在纸张内存在的空气被分散剂或混合物所取代。

15 根据本发明的一种实施方式，采用树脂-丙烯酸盐-混合物或-分散剂，尤其是氨基树脂-丙烯酸盐-混合物进行浸渍处理。采用这种混合物或分散剂可以实现大约达 15 克/平方米的纸张克数的下限。当混合配比相宜时，采用这种方法制造的纸张可以实现足以在制造板材时例如作为耐压原纸的抗撕裂强度。专业人员可以通过少许试验找出相宜的混合配比。

20 纸张的克数不得超过上限 60 克/平方米，优选不得超过 40 克/平方米，从而可以实现充分高的成本优势。目前克数的最佳值在 25 至 35 克/平方米之间。

根据本发明的一种有益的设计，可将诸如硅酸铝、碳酸钙、 $TiO_2$ 、 $Al_2O_3$ 或硅酸镁等色素添加入混合物中。以此大大降低其透光性。

25 在采用色素的情况下，经浸渍处理的纸张由于其具有的不透光性和高的覆盖能力，因而非常适用于作为装饰纸。

根据本发明的一种优选的实施方式，含有丙烯酸盐的分散剂或混合物从两面被挤压入经通风处理的纸张中。经证实，纸张从中间开始充满含有丙烯酸盐的分散剂或混合物。这种经浸渍处理的纸张特别适用于所述的板材加工。

根据本发明的方法制造的纸张与上光膜的区别尤其在于，丙烯酸盐存在于纸张内，并且不仅仅完全或绝大部分浮在纸张表面。经蒸汽试验表明，这种纸张的抗分解强度明显地好于本说明书开始时所述的上光膜。在进行蒸汽试验时，纸张将接受两个小时水蒸气的处理。与本发明的纸5张相比，通常的纸张上将出现分解。

本发明的纸张作为反张力纸或装饰纸适用于所述板材的加工。

根据本发明方法的一种设计，在装饰纸的一个面上不仅具有耐磨的诸如碳化硅颗粒或刚玉颗粒，而且还附加具有纤维和/或球体。与耐磨的颗粒相比，纤维或球体由诸如聚酯、聚酰胺或玻璃等软的材料构成。纤维和/或球体用于在进行层系统挤压时保护环围装饰纸的挤压带不会受到损伤。因此，在带有耐磨颗粒的层的上面可以不必设置覆层。这样可以节省约 1/3 的成本，该成本系包括采用已有技术时的对装饰纸的浸渍处理成本连同与带有覆层的层的覆着的成本。10

对装饰纸浸渍处理尤其包括下述步骤。采用树脂，特别是氨基树脂15对装饰纸进行浸渍处理，并且对带有装饰的一面覆着耐磨颗粒。接着在其上覆着纤维和/或球体。这样即可以实现对压力装置保护的在耐磨颗粒的上面形成的覆盖层。

在对纤维或球体覆着之前所进行的处理方法如下。

在装饰纸上以特定的分散度附加喷涂一层由氨基树脂及耐磨颗粒构成的层，其中以干燥原纸的重量为 100%，最终的单位面积重量为 250%。20由文献 WO 00/44984 得知，经证实，对分散剂的喷涂是有益的。接着宜采用轧辊保证被喷涂的分散剂的光洁度和均匀分布。

上述的分散剂优选由 100 份氨基树脂、20 至 95 份耐磨物质、0.5 至25 2.5 份硅烷粘接剂、5 至 25 份流动辅助剂、0.1 至 0.4 份润湿剂、0.05 至 0.4 份分离剂和氨基树脂硬化剂。

作为氨基树脂特别是采用三聚氰胺树脂，作为流动辅助物质例如采用聚乙二醇醚、 $\epsilon$ -己内酰胺或丁二醇以及作为耐磨物质例如采用平均粒度为 60 至  $160\mu\text{m}$  的碳化硅或以刚玉形式出现的或由粒度为 60 至  $160\mu\text{m}$ 30 熔融物构成的氧化铝。也可以采用由碳化硅和氧化铝构成的任意的混合物。

接着宜采用如下方式对纤维和/或球体进行覆着。首先制成一种由树脂、纤维或球体构成的混合物并且将混合物涂覆在经以上述方式处理的装饰纸上。将混合物设置在表面可进一步改善对压力装置的保护，这是因为附加的树脂也将起着保护作用。

5 优选选定的纤维的粗细或球体的直径应使在对相应的层系统挤压的板材加工过程中使刚玉-或碳化硅颗粒远离压力机的相应的表面。因而将避免受到坚硬的碳化硅-或刚玉颗粒的损伤。

10 当既采用纤维，又采用球体时，球体的平均直径优选大于纤维的平均直径。此时球体将保证耐磨颗粒与例如压力带之间所需的保护间隔。纤维尤其用于对树脂的固定并防止出现裂纹。

15 采用本发明以改善的并以成本特别低廉的方式可实现对压力机的相关的表面进行保护，避免受到耐磨颗粒，例如坚硬的刚玉颗粒或碳化硅颗粒的损伤。由于相应增大了对一压力机的相关的表面，例如对一所谓的双带-层压设备的压力带进行精整处理的时间间隔，因而势必减少了伴随精整处理的费用和停产的次数和时间。所以明显地节省了成本。

20 典型的纤维长度至少为 0.5mm，但优选至少为几毫米，例如 2mm、4mm、或 5mm。纤维越长，则越能更好地防止板材表面出现裂纹。尤其通过与此相联系的粘度的增大来决定纤维长度的上限。当树脂-纤维-混合物的粘度过高时，则对其不再能加工处理。纤维的直径例如为几十微米或甚至等于 100μm 或大于 100μm。

球体的典型的直径在 30 至 200μm 范围内。因此，一方面可以保证刚玉颗粒或碳化硅颗粒与压力机的相应的表面间的所需的间隔，另一方面球体充分的小，使肉眼不可见。

25 当纤维或球体具有上述的规格并嵌入树脂内时，则纤维及球体不会对视觉效果造成不利的影响。

30 纤维或球体优选由聚酯、聚酰胺或玻璃构成。这些材料满足生产时以及制造完毕后所需的性能要求。在生产过程中，这些材料保持充分的稳定。聚酯、聚酰胺或玻璃是本发明定义的充分软的可以避免压力装置受到损伤的材料。在一成品的板材上由上述材料实现充分的透明度，因而对装饰的视觉效果不会造成不利的影响。这些材料可以有益地实现较

大的可加工的纤维长度，该纤维长度可以明显地增大由纤维素构成的本发明采用的纤维的长度。即与增大的纤维素纤维的长度相比，随着诸如聚酯纤维、聚酰胺纤维或玻璃纤维等人造聚合物的纤维长度的增大而粘度的提高很小。

5 所以可以加入充分多的纤维，从而与短的纤维素-纤维相比可以更好地保护压力机免受损伤。特别是当纤维以下面将加以表述的无纺布形式存在时，就是此情况。

纤维和/或球体可以由不同的材料构成。例如可以同时采用聚酯纤维、聚酰胺纤维和玻璃纤维。

10 与球体相比，优先选用纤维，因为可以避免在表面形成裂纹。优先补充采用球体。所以添加入作为球体的优先由玻璃构成的空心球体，以便提高保护效果，出于对上述原因的考虑球体的直径尤其是在 30 至 200 $\mu\text{m}$  范围内。

15 本发明的装饰纸优先具有的固体重量为 25 至 35 克/平方米。纤维分量尤其在 5 至 100 克/平方米范围内。另外为了增强，宜采用达 80 克/平方米的球体，尤其是微玻璃空心球体。

20 根据本发明进一步的有益的设计，采用的纤维是无纺布。纤维被所谓的相互交织在一起。无纺布可以非常好地实现增强和保护作用。因此可以进一步减少形成裂纹的危险并随之降低有关表面受损的危险。由于采用了无纺布，因而在对树脂-纤维-混合物进行覆着时可以特别好地实现挤压加工时对树脂的固定。树脂则可以实现对压力装置的补充保护。

在设置无纺布时，通过添加球体可以附加改善保护效果。

## 具体实施方式

25 下面将对照实施例对本发明做进一步的说明。

对克数为 30 克/平方米的纸张的一个面用含有丙烯酸盐的分散剂进行润湿处理。所述分散剂包含下述组分：固体含量为 50（重量）% 的 770 克商用丙烯酸盐-分散剂、固体含量为 50（重量）% 的 225 克商用脲甲醛浸渍树脂以及 5 克尿素树脂硬化剂。对混合物进行充分地搅拌并加以应用。

经润湿处理的纸张在两个相互顶压的轧辊间通过。轧辊具有一个由硬橡胶构成的表面。在轧辊上均匀地涂覆上述的分散剂并借助刮刀均匀地将分散剂分布在轧辊表面。

当纸张离开轧辊时，含有丙烯酸盐的混合物已位于纸张的内部。对 5 该纸张进行干燥处理并且接着在板材加工时加以应用。

在制备装饰纸时，对分散剂附加添加入色素，确切地说固体含量为 70 (重量) % 的 250 克二氧化钛悬浮液和 50 克硅酸镁。与通常制备的克数为 70 克/平方米的纸张相同，该纸张至少是透光的。

根据 EN 438 标准对采用纸张以上述方式制成的板材进行检验。其中 10 所有的标准值得到充分地满足。特别是成功地通过蒸汽试验。

在加工板材时，优选按如下方式对装饰纸进行应用。在装饰面上均匀地喷涂由氨基树脂和刚玉颗粒构成的混合物。其中每平方米应用刚玉 15 克。将湿的纸带输送给悬浮干燥器。在干燥器中的温度为 170°C。在经这样处理的纸带的装饰面上定量涂覆由商用氨基树脂和聚酯纤维构成 15 的混合物。涂层中的固体重量为 70 克/平方米。在混合物中的纤维分量为 30 (重量) %。纤维的平均长度为 5mm，平均直径为 80μm。接着在 160°C 的情况下进行第二次干燥，直至残余湿度达到 7%。经过这样浸渍处理的装饰纸以上述方式被继续加工成板材，确切地说被继续加工成作为地板的镶板。同样，本发明的纸张也可以作为反张力纸。与已有技术相比，可以节省 150 克/平方米树脂。甚至当纸张克数特别大时，例如达 20 150 克/平方米时，与已有技术相比，本发明的纸张也是具有优点的。